We Claim:

1. A process for patterning films comprising the steps of:

(a) vapor depositing resist material onto a film disposed on a substrate through a repositionable aperture mask, and

(b) using a subtractive process to remove the exposed portion of said film.

2. The process of claim 1 further comprising the step of removing said resist material.

3. The process of claim 1 wherein said resist material is selected from the group consisting of vapor-depositable polymers, parylene, metal oxides, metal nitrides, inorganic semiconductors, and metals.

4. The process of claim 3 wherein said resist material is silicon dioxide.

5. The process of claim 1 wherein said film is selected from the group consisting of organic and inorganic semiconductor materials, organic and inorganic dielectric materials, metals, metal oxides and nitrides, and transparent conducting oxides.

6. The process of claim 5 wherein said film is selected from the group consisting of organic and inorganic semiconductor materials.

7. The process of claim 6 wherein said film is selected from the group consisting of pentacene, substituted

pentacene, amorphous and poly silicon, and zinc oxide.

8. The process of claim 1 wherein said subtractive process is selected from the group consisting of wet chemical etching, solvent removal, dry etching, and laser ablation.

9. The process of claim 1 wherein said aperture mask is reusable.

10. The process of claim 1 wherein said aperture mask is a polymeric aperture mask.

11. The process of claim 10 wherein said polymeric aperture mask comprises polyimide.

12. The process of claim 1 wherein said substrate is a flexible substrate.

13. The process of claim 12 wherein said flexible substrate is capable of wrapping around the circumference of a cylinder of less than about 50 cm diameter without distorting or breaking.

14. A thin film transistor wherein one or more transistor features were patterned from a film using the process of claim 1.

15. A thin film transistor wherein the semiconductor was patterned from a film using the process of claim 1.